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Radioactive News

For Radioactive Material Licensees in North Dakota

North Dakota Department of Health

Use of Radiation Dosimeters

Radiation dosimeters (whole body or ring badges) are issued to authorized users of radioactive material whenever licensed activities could result in an external exposure hazard of more than 10 percent of the established occupational dose limit. These radiation dosimeters must be provided to employees by the licensee.

All dosimeters, used or unused, are collected on a regular frequency (monthly or quarterly) and returned to the provider for processing and evaluation. Dosimetry processing must be conducted under the National Voluntary Laboratory Accreditation Program (NVLAP), which is operated by the National Institute of Standards and Technology (NIST).

In some cases, where personnel are not individually monitored, an area badge may be used to give an indication of any ambient radiation in the area. If dosimeters are individually assigned, they must be worn only by that specific individual while working with radioactive material or other sources of ionizing radiation.

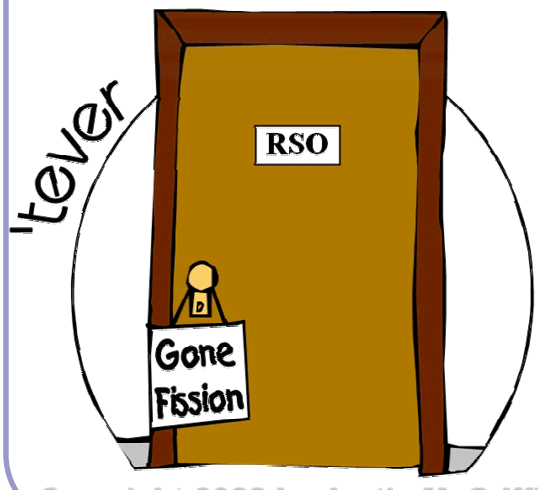
Dosimeter readings can be affected by various environmental conditions. Do not leave the dosimeter in direct sunlight or in a hot environment such as a windowsill or in your car on a sunny day. Do not get the dosimeter wet – both heat and water can invalidate the results. Also, do not store the badges near any radioactive material; this will result in a false high reading.

If an unusual exposure is recorded on the dosimeter report, the licensee's radiation safety officer (RSO) should conduct and document an investigation of its cause. The wearer should be asked to describe his or her use of radioactive material for the time period in question and speculate on the cause(s) of the exposure.

If a dosimeter is lost or damaged, the wearer should provide an explanation to the RSO describing:

1. How the dosimeter was lost or damaged.
2. The steps to be taken to prevent reoccurrence.
3. A summary of activities performed while the dosimeter was lost/damaged.

(Continued on page 2)



***Fis'·sion**: 1. The act or process of splitting into parts. 2. A nuclear reaction in which an atomic nucleus, especially a heavy nucleus such as an isotope of uranium, splits into fragments, usually two fragments of comparable mass, releasing from 100 million to several hundred million electron volts of energy.*

– from The American Heritage® Dictionary of the English Language: Fourth Edition. 2000.

In This Issue

National Directory of Brokers and Processors

The Low-Level Radioactive Waste Forum Inc. and the Southeast Compact Commission for Low-Level Radioactive Waste Management have announced the creation of an electronic National Directory of Brokers and Processors of radioactive waste. The directory is intended for use by compacts, states, federal agencies and other users of radioactive material to provide information about companies that package, transport, process or otherwise manage radioactive material in preparation for ultimate disposal. The directory may be accessed at www.bpdirectory.com.

A second directory of broker and processor services compiled by the Conference of Radiation Control Program Directors is located at www.crcpd.org/Comm_Svcs.asp.

Do you like or dislike this newsletter? Send comments to Justin at jgriffin@state.nd.us.

Use of Radiation Dosimeters (cont.)

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4. An assessment of the probable dose during that period.

If you have any questions about whether or not you should be wearing a whole body badge or a finger ring badge, please contact your RSO or the Radiation Control Program at 701.328.5188.

Important points to remember about radiation dosimeters:

★ Always wear your assigned dosimeter when working with or near radioactive material or other sources of ionizing radiation.

★ Whole-body badges should be worn on the torso between your neck and your waist. Finger ring badges should be worn on your dominant hand.

★ When not in use, place dosimeters in an agreed upon central location where they can be easily located and exchanged by the RSO. This location should be well away from sources of radiation to prevent irradiation of the dosimeter when not in use.

★ If an individual works with ionizing radiation in two different facilities, the employee should have a separate badge at each location to help identify the facility in which any elevated dose is received. The individual's total dose must not exceed the annual limits.

Annual exposure limits

Whole body, blood-forming organs and gonads: 5 rem/year

Lens of eye: 15 rem/year

Extremities and skin: 50 rem/year

Fetal: 0.5 rem/gestation period

★ Do not take a dosimeter home or wear it during non-job related radiation exposures such as medical or dental x-ray examinations. Badges are intended to measure occupational dose only.

Taking badges home also increases the possibility of loss or damage, particularly in the washing machine and dryer.

★ Do not intentionally expose badges to radiation.

★ Never share your badge or wear another person's badge. Each badge is intended to be worn by only the designated person.

★ If there is a possibility of an unusual exposure to your dosimeter or if it has been damaged, please notify your RSO and explain the situation. Your badge may be returned for rapid emergency processing.

★ A separate dosimeter, known as a control dosimeter or control badge, is included with each badge shipment to monitor radiation received in transit and storage. It is important that the correct control badge is returned with the corresponding dosimeter shipment.

★ After your returned dosimeters have been processed, the control badge exposure is subtracted from each individual dosimeter in the shipment to separate actual occupational dose from the background exposure.

Did you know: Nothing can travel faster than the speed of light in a vacuum?...

Violations & Penalties: Don't Let This Happen to You

Radioactive material licensees face important responsibilities everyday. Numerous regulations exist to protect radiation workers, the public and the environment. Noncompliance with established regulations discovered during inspections performed by regulatory agencies often result in citations, violations and/or penalties. It is hoped that by reviewing the following violations and penalties, extra care will be taken in maintaining your radiation safety program while performing licensed activities. A few examples of violations and associated penalties assessed by the U.S. Nuclear Regulatory Commission in 2003 appear below:

- Failure to provide dosimetry to an individual using radioactive material, and failure to ensure that individuals using radioactive material are either designated by the radiation safety officer and properly trained or are under the direct supervision of someone named on the license resulted in a civil penalty of $3,000.

- Failure to conduct operations so that the total effective dose equivalent to individual members of the public from licensed operations does not exceed 1 millisievert (100 mrem) in a year, and the failure of the radiation safety officer to investigate overexposures and other deviations from approved radiation safety practice and to implement corrective actions as necessary resulted in a civil penalty of $6,000.

- A civil penalty in the amount of $9,000 was issued for failure to limit the occupational shallow-dose equivalent to an individual adult to less than 500 millisieverts (50 rem) to any extremity, and a failure to make surveys that are necessary to comply with regulations.

- Willful actions of a radiation safety officer who knowingly performed and allowed radiography work by employees without accompaniment by a certified radiographer, and a failure to file for reciprocity resulted in a civil penalty of $6,000.

- A radiographer's willful failure to control and maintain constant surveillance over an industrial radiographic exposure device in an unrestricted area resulted in a civil penalty of $6,000.

- Failure to amend the license to reflect a change in the radiation safety officer, and a failure to amend the license to add two new field stations and a permanent radiographic installation resulted in a civil penalty of $6,000.

- Deliberate failure to make required surveys to limit dose to members of the public, perform required weekly removable contamination surveys in the restricted and unrestricted areas, and accurately record the results of required weekly fume hood face velocity measurements resulted in a civil penalty of $12,000.

- Willful performance of radiographic operations at temporary job sites by radiographers' assistants and helpers who were not accompanied by at least one qualified radiographer; performance of radiographic operations by individuals who had not met training requirements; failure to wear a combination of a direct reading pocket dosimeter, an alarming ratemeter, and either a film badge or thermoluminescent dosimeter; and failure of the corporate and site radiation safety officers to oversee the radiation safety program resulted in a civil penalty of $9,600.

- A civil penalty in the total amount of $90,000 was issued to a licensee due to problems involving the failure to keep public radiation doses within the established limits ($78,000); the willful failure to perform radiation surveys and failure to maintain control of a radioactive well logging source ($6,000); and the failure to follow emergency procedures and secure the source after it was found ($6,000).

Additional examples of the NRC's significant enforcement actions can be reviewed In the *NMSS Licensee Newsletter* which is available online at www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0117/.

Increased Security for Portable Gauge Licensees

The U.S. Nuclear Regulatory Commission (NRC) is in the final stages of amending its regulations to increase security requirements for portable gauges that require a specific license. The proposed rule would require all portable gauge licensees to provide a minimum of two independent physical controls to secure portable gauges from unauthorized removal whenever the portable gauges are not under the control and constant surveillance of the licensee's authorized users.

This rule was developed to enhance the current level of security and control for portable gauges by reducing opportunities for theft. NRC staff expects that the physical controls used by the licensees to form tangible barriers will be designed and constructed of material suitable for securing gauges in such a way that they would require a more determined effort to remove the gauge.

Three examples of the two independent physical control mechanisms to secure a portable gauge include:

- Storing the gauge in a locked cabinet that is located in a separate secured area inside a shop or garage.
- Storing gauges in a padlocked shed which is surrounded by a fenced-off area with a locked access gate.
- Storing a gauge within a locked vehicle while also securing the gauge case to the vehicle using a chain or steel cable to prevent removal.

In the U.S. approximately 5,100 portable gauge licenses are issued by either the NRC (1,100 licenses) or Agreement States (4000 licenses) such as North Dakota. Once the final NRC regulations become effective, our state and the other Agreement States are required to adopt similar security regulations to maintain compatibility with the NRC.

For more information about this topic, read the applicable Federal Register Notice [August 1, 2003 (Volume 68, Number 148)] at ruleforum.llnl.gov/cgi-bin/rulemake?source=gauges_prule&st=prule; or contact Lydia Chang, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, by telephone at 301.415.6319 or by e-mail at lwc1@nrc.gov.

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Basic Radiation Protection Guidelines

Although some radiation exposure is natural in our environment, it is desirable to limit radiation exposure as much as possible or practical.

Time: Shorter times in radiation fields means less radiation exposure. Work quickly and efficiently. A rotating team approach can be used to keep individual radiation exposures to a minimum.

Distance: Increased distance from a source of radiation means less radiation exposure. In emergency situations, do not touch radioactive materials. Use shovels, brooms, etc., to move the material if needed.

Shielding: Although not always practical, shielding offered by lead or concrete barriers also can reduce radiation exposure.

Quantity: Limit the amount of radioactive material in the working area to decrease exposure.

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